AIDS Conference

Vaccine work highlights research progress
Page 7

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CHEMICAL & ENGINEERING NEWS

JULY 16, 1990

News of the Week

■ **The recent fire and explosion at Arco Chemical's Channelview, Tex., petrochemical complex that killed 17 workers have spotlighted the continuing concerns about safety of petrochemical plant operations.** **Page 4**

■ **GE scientists have prepared diamonds of nearly pure carbon-12 that have much higher heat conductivity than natural diamonds but that are still electrical insulators.** **Page 5**

■ **London meeting to amend the Montreal protocol left dangling the future of hydrochlorofluorocarbons, under development as substitutes for chlorofluorocarbons.** **Page 5**

■ **Patients don't own cells or tissue removed during medical procedures, and they can't share in profits from commercial use of them, California Supreme Court has ruled.** **Page 6**

Business

Random testing of employees for drug and alcohol abuse is being carried out by an increasing number of chemically related companies. **Page 17**

Government

The continuing decline in new research grants from NIH has research workers scrambling to find some solutions. **Page 20**

The House has cut back on NSF and NASA budget requests in fiscal 1991 appropriations bill that now goes to the Senate. **Page 22**

Science/Technology

Biotechnology techniques, based on principles of protein chemistry, are being exploited to produce new advanced materials. **Page 26**

Books

"Brainstorming: The Science and Politics of Opiate Research" is a personal account by scientist Solomon Snyder of the process and politics that led to the discovery of opiate receptors. **Page 34**

Cover: Photo by C&EN's Rudy M. Baum

News Focus

Advances in research on AIDS vaccine, which scientists now think could be available by the end of the 1990s, highlighted 6th International Conference on AIDS. **Page 7**

Letters 2

Concentrates

Business 16
Government 19
Science/Technology 24

The Departments

ACS News 37
Newscripts 56

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LETTERS

Shakhashiri praised

As faculty members of the Carleton College chemistry department we have greatly admired the achievements of Bassam Z. Shakhashiri. As Assistant Director for Science and Engineering Education at the National Science Foundation, he has generated excellent programs based on sound philosophy. We need leaders with the vision, energy, and charisma of Shakhashiri to improve the sad state of science education in this country.

The recent, abrupt dismissal of Shakhashiri from his outstanding work (C&EN, June 4, page 5) is a morale-crushing blow to those of us who appreciated his creative and dedicated style. What a grim message Erich Bloch has sent to the science education community: Don't be so good at your job that you become popular with Congress and highly visible to those who need inspiration. We are outraged at this action.

Lynn A. Buffington
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Carleton College
Northfield, Minn.

Shortage of chemists

In recent letters and articles in C&EN, concern has been expressed about the shortage of Ph.D. chemists. This is not much of a surprise to me as a native of Germany who received a Ph.D. in chemistry at the University of Hamburg. I would say that this shortage is caused by three factors.

First, the great majority of American students are finishing their chemical education with the award of a bachelor's or master's degree. Second, there is a lack of true willingness to spend six years to get to the top, which a Ph.D. degree symbolizes. Third, there is a lack of genuine interest in chemistry, which unfortunately has a poor public image—particularly in America, the greatest industrial country on Earth. This image is of course exaggerated and distorted. The general public tends to remember mostly the bad things, such as air and water pollution, Chernobyl and Bhopal, oil spills from tankers, Hiroshima, and Three Mile Island.

Now let me add some details. The bachelor's and master's degrees do not exist in most European countries. Hence, almost every student who wants to become a professional chemist must go all the way that leads to the doctorate, which is based on a doctoral dissertation that usually takes at least two years of laboratory work. Parents of most European middle-class families, with a maximum of three children, can well afford and are very proud to send their children to a university, assuming of course that they want it and have the stuff for it. There is no federal support for graduate education, no living allowances, no fellowships and stipends. Nobody expects financial support from the government. However, it should be noted that all these benefits will be available after graduation.

In Europe there is no shortage of Ph.D. chemists, never was, and never will be. The European Ph.D. degree has a special lustre and prestige. It is a very special privilege to possess, all of which it does not have in America. There is, of course, a great demand for chemists with a B.S. and M.S., although these still have only a restrictive choice in their search for a position. All universities, colleges, and research institutes are explicitly looking for Ph.D. chemists, and most key positions in the chemical and pharmaceutical industry are mostly reserved for chemists with a Ph.D. degree.

Indeed, one wonders why in the richest country in the world (which has become the research center of the world), only 30% of all chemists have a Ph.D. degree.

Carl Tiedcke
ACS 50-year member emeritus
Santa Barbara, Calif.

Who governs our image?

Raymond B. Seymour's lament (C&EN, April 2, page 35) concerning the image of our profession and the lack of awareness of ACS by state governors was right on. However, in addition to Rudy Perpich of Minnesota, at least one other governor knows about us. He is James Martin of North Carolina, who has won the ACS Parsons Award and who, as governor, presented an Outstanding Local Section Award to the Central North Carolina Section in Greensboro a few years ago. The event was a great success and drew two congressmen as well.

Are there other governors to add to this short list, and if not, is it their fault or ours?

Robert B. Fox
Naval Research Laboratory
Washington, D.C.

Corporate Testing for Drug, Alcohol Abuse on the Increase

C&EN survey shows that more major chemical companies are performing random testing, especially in safety-sensitive jobs

Marc S. Reisch,
C&EN Northeast News Bureau

Random testing of employees for drug and alcohol abuse is on the rise in the chemical industry. Despite the crazy quilt pattern of state regulations that make nationwide drug policies difficult to enforce, federal regulation through the Department of Transportation (for testing truckers of interstate hazardous material shipments) and the Federal Aviation Administration (for testing airplane pilots) has helped encourage companies in their decision to test chemical industry workers—especially those in safety-sensitive jobs.

In a recent survey of 19 chemically related companies, C&EN found that 14 have policies on random testing. One company, Phillips Petroleum, just instituted a policy subjecting all U.S. employees, including executives, to "unannounced, periodic testing ... except where prohibited by state law." It is the most wide-ranging of any company policy among those surveyed. Phillips did not previously test all employees.

Thirteen other companies in the survey test employees on a random basis for substance abuse in a variety of instances. Five companies test workers in critical safety-related jobs as site managers see fit. Two test all employees in safety-related jobs as a matter of corporatewide policy. At BASF, all workers at two sites are subject to drug testing. Five other companies, however, subject employees to testing only to satisfy federal regulations.

When C&EN conducted a similar survey in 1987 of the same 19 companies, all required preemployment testing of prospective employees, but only two companies had any policy regarding random tests of employees (C&EN, Aug. 3, 1987, page 7). Where random tests were performed, they were limited to specific sites or divisions.

Regular, periodic examinations are still the policy at Amoco as they were in the 1987 survey. Amoco's testing policy is incorporated into the annual health checkups it requires of plant employees, including first-line supervisors and lab workers who handle chemicals. Testing results are not available to supervisors except if employees allow the medical department to release those results or if the exam involves workmen's compensation resulting from an injury, says John H. Mitchell, corporate medical director for the company.

In cases involving accidents, however, for-cause testing is nearly universal. But Du Pont, General Electric, and Hoechst Celanese do not enforce testing at all of their plants for drug or alcohol abuse when an employee's performance seriously deteriorates or when employee involvement in a plant accident leads to a suspicion of drug abuse. Testing for abuse is at the option of site managers, according to corporate guidelines.

Phillips Petroleum, in instituting its mandatory drug testing policy, notes the force of the federal government's persuasion in its policy statement to employees. "The federal government directly and through its regulatory agencies has directed employers to take specific steps to deal with the problem of substance abuse," Phillips says. The policy adds that "as a federal contractor, the company is obligated under the Drug Free Workplace Act of 1988 to have a clear policy on drugs and alcohol, to communicate such policy to employees, and to undertake efforts to achieve a drug-free workforce and workplace."

Phillips denies any clear connection between its newly stated substance abuse policy and the Oct. 23, 1989, explosion at its Pasadena, Tex., polyethylene complex in which 19 people were killed. The Occupational Safety & Health Administration ruled in April that the accident was due to "failures in the management of safety systems" (C&EN, April 30, page 6). But the concerns outlined in its employee substance abuse policy must play a role now in the firm's management of safety systems: "The safety of our em-

C&EN staff photo

Technician uses automated analyzer to test urine sample for presence of illegal drugs

ployees, protection of our environment, quality of our products and services, and the financial performance of our company can be directly and adversely affected by the use or abuse of unauthorized, prohibited, illegal or controlled substances including alcohol, drugs, and other chemicals."

Phillips' policy regarding substance abuse goes beyond its own employees. It also includes "all contractors, visitors, vendors, consultants, or other individuals working on company property or company assignments." While Phillips' policy admits it cannot force compliance by outsiders, it notes that those "found or suspected to be in violation" will be "denied access to the job site or work assignment."

Most companies do not see an immediate need for so inclusive a substance abuse testing program as Phillips has in place. Hercules' corporate medical director, Robert T. Beattis, says that Hercules has not found a high incidence of abuse when it has tested its workers. When workers have tested positive, rehabilitation has been high.

ICI Americas' Mark Dobbins, director of training and industrial relations, sees no internal evidence that the company's for-cause-only testing policy is not serving the company's needs. Most important, he believes, is that the company be clear in its policy that employees must be fit for work, and that substance abuse is not acceptable. If any employees do have a substance abuse problem, the company wants to make every effort to help them rehabilitate. Like all the other companies in the survey, ICI pays a share of rehabilitation benefits through the insurance package in which an employee is enrolled.

Like ICI's Dobbins, Jeff Gleason, manager of employee assistance at Olin, says the testing is not meant to be punitive. "The focus is not on punishment, but remediation." Olin tests employees in designated safety-sensitive jobs where it is allowed according to state law and by agreement with the employees' union. That has been a policy since 1987, he says. If the employee objects, he or she is given the opportunity to work in another less sensitive job.

Many chemical firms screen employees for drug abuse

Company	Preemployment	Existing employees: For cause	Existing employees: Regular	Existing employees: Random	GC/MS confirmation[a]	Employee assistance programs
American Cyanamid	•	•		•[b]	•	•
Amoco	•	•	•[c]	•[b]	•	•
Arco Chemical	•	•			•	•
BASF	•	•		•[d]	•	•
Borden	•	•		•[b]	•	•
Ciba-Geigy	•	•			•	•
Dow Chemical	•	•		•[c]	•	•
Du Pont	•	•[d]		•[e]	•	•
Eastman Chemical	•	•			•	•
General Electric	•	•[d]		•[e]	•	•
Hercules	•	•		•[e]	•	•
Hoechst Celanese	•	•[d]			•	•
ICI Americas	•	•			•	•
Mobay	•	•		•[b]	•	•
Monsanto	•	•		•[c]	•	•
Olin	•	•		•[e]	•	•
Phillips Petroleum	•	•		•	•	•
Shell Oil	•	•		•[b]	•	•
Union Carbide	•	•		•[e]	•	•

a Gas chromatography and mass spectrometry. b Transportation workers subject to federal testing requirements. c In safety-sensitive jobs. d Not at all sites, but instituted by site managers according to company policy manual. e Not at all sites but instituted by site managers for certain critical safety-related jobs.

Amoco's Mitchell says that the company's substance abuse testing program is part of an overall wellness program, which ensures the productivity of an employee as well as his or her overall safety and health.

Some employees, notes Bill Kovack, Union Carbide's corporate director of employee relations, welcome substance abuse testing, because it takes their personal safety into consideration. Other employees are not so receptive to such policies. The attitude of labor unions with which the company deals is that they neither disagree nor agree with testing policies.

John H. Kirkman, BASF's corporate director of industrial relations, says that at the sites where BASF tests employees, the unions are concerned both about the accuracy of tests and the chain of custody for samples. As a result, the company, like all the others in the survey, uses only labs approved by the government through the National Institute on Drug Abuse. Contractors are expected to "live by our rules," says Kirkman, which is a "a widely held practice."

According to Elmer Greene, medical director for Eastman Chemical, for-cause testing is a condition of employment at the company, and the objective is a safe working environment. The company, he says, shows a lot of compassion when an employee has a substance abuse problem, and the employee assistance program offered employees generally gets good results in helping rehabilitate an employee. Most for-cause testing turns up positive results for alcohol, he says, while most preemployment tests come back positive for marijuana use.

American Cyanamid's corporate medical director, Michael Utidjian, says management should never be allowed to demand that an employee be tested for substance abuse. The decision, he says firmly, is a medical one. Endocrine disorders and psychiatric illnesses may be the cause for all types of unusual behavior, and the decision to test an employee for substance abuse should ultimately be up to a qualified doctor. □